**MA 207 Probability Distributions Group Members:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. You roll a pair of fair six-sided dice. Let *X* be the sum of the numbers showing.
   1. Find *P(X=2).*
   2. Find *P(X=5)*.
   3. Finish the table below which describes the **probability distribution** of *X*, which is denoted by *p(x) = P(X=x)*.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***x*** | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| ***p(x)*** |  | 2/36 | 3/36 |  |  |  | 5/36 |  |  |  | 1/36 |

* 1. Find the **expected value**, or **mean** of X.

1. At a certain community college, pick a student at random and record their age,  The distribution is approximately **normal** with a mean of 33 years and a standard deviation of 5 years.
   1. Pick one individual student at random. Find the probability that this student is younger than 43. Shade a region under a labeled normal curve to represent your answer.
   2. Pick one individual student at random. Find the probability that this student is older than 28. Shade a region under a labeled normal curve to represent your answer.
   3. Find the z-score for a 35 year-old.
   4. Pick one individual student at random. Find the probability that this student is between 26 and 29. Here you will need the standard normal table.
   5. Pick one individual student at random. Find the probability that this student is older than 30.
   6. Pick one individual student at random. Find the probability that this student is younger than 35.
   7. How old is an individual at the 90th percentile?